DOCUMENT RESUME

ED 374 963 SE 054 748

AUTHOR Rogers, Laurette H.
TITLE California Freshwater Shrimp Project: An Eco-Action Project with Real Life Learning.
PUB DATE Apr 94
NOTE 43p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Constructivism (Learning); Endangered Species; *Environmental Education; *Experiential Learning; Grade 4; Integrated Activities; Intermediate Grades; Learning Activities; *Student Participation; *Student Projects
IDENTIFIERS *Environmental Action; Freshwater Systems; Shrimp

ABSTRACT

The California Freshwater Shrimp Project is an example of a student-initiated, eco-action project. Students, from a fourth grade class in the Ross Valley School District in San Rafael, California, were linked to their community and environment through their work in rehabilitating habitat and educating the public. The paper gives an overview of a project to rehabilitate a creek inhabited by the endangered California Freshwater Shrimp and details Real Life Learning, which involves students taking responsibility for their own education by directing it. Eight key outcomes of the experience, including students acquiring academic skills through integrated learning and obtaining skills needed in real life that are not usually taught in school are reviewed. The paper describes the work of student committees that were able to alert government officials about the shrimp's dilemma; institute a Shrimp Network of biologists, ranchers, and business people; begin rehabilitation of the creek; and win local and national recognition. (LZ)

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CALIFORNIA FRESHWATER SHRIMP PROJECT:
AN ECO-ACTION PROJECT WITH REAL LIFE LEARNING

BY

LAURETTE H. ROGERS

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Dominican College

San Rafael, CA

April, 1994

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ACKNOWLEDGEMENTS

I wish to thank the following people for their help in the preparation of this thesis: Dr. Madalienne Peters for her great patience and calm, which were tested more than once; Dr. Barry Kaufman for enthusiatically sharing his vision of democratic education; Jan Kristal, Dr. Florence Webb, Kak Swirski, and my son, Chris, for mercilessly, yet lovingly editing this manuscript.

I would also like to thank Paul and Betsy Martin for working with us in such a wonderful way in order to rehabilitate the riparian habitat on the ranch. Liza Prunuske also worked with us every step of the way, teaching us so much about habitat restoration. So many parents, businesspeople, state employees, friends, school staff and others gave of their time to ensure the Shrimp Project's success.

I would especially like to thank my husband, Mike, for his forbearance and fortitude during the last year and a half. He still thinks I love the shrimp more than him, but I don't.

Finally, my deepest appreciation and admiration go to those who showed us the way: Taylor Bedilion, Lauren Brydon, Nick Buschman, Andrew Clevenger, Lucia Comnes, Alexis Davies, John Elliott, Natalie Erlich, Dominic Gaidano, Anna Galli, Noah Heldfond, Miller Hoffman, Erin Howes, Christopher Hudson, Stephanie Kauppila, Eliza Lehrke, Megan Marsh, Alexander McRobbie, Aaron Mihaly, Chris Mitchell, Hannah Reynolds, Risa Sandberg, Patrick Segale, Greg Spellerberg, Mickey Thoms, Nico Toneff, Adam Welliver, and Brian Yarish.

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ABSTRACT

The California Freshwater Shrimp Project is an example of a student-initiated, eco-action project. This project's success indicates that children are not just our future leaders, but can be effective leaders today. Shrimp Project students were linked to their community and environment through their work in rehabilitating habitat and educating the public. This paper gives an overview of this project and details Real Life Learning, which involves students taking responsibility for their own education by directing it. Possible outcomes of Real Life Learning, eco-action projects are explored. The necessary teacher/student role shifts are also analyzed and discussed.

INTRODUCTION

The call has gone out to reorganize schools, to restructure. It is clear that the way that we now organize our schools is dated, and ineffective for the students of today. Gang activity, drugs, teen pregnancy, and a general lack of hope in a sustainable future infect many of our children. School cannot solve all of these problems alone. Yet, a restructured school, geared to the students' interests and needs, can empower its students, giving them the chance to feel valued and to succeed.

How can school be meaningful to students? How can learning be allowed to be the natural, relevent process it can be? Can we give the responsibility for learning back to the student? One can easily see that our old factory-model of teaching and learning is ineffective and often detrimental. Students are not products. Students are valuable people now, not just as potentially effective adults. Why should children of the same age be sitting at attention in an isolated room while one adult sprays them with knowledge? Let's put children back in the community, with people of all ages, and learning that makes sense to the learner.

Real Life Learning involves students choosing to follow their own interests, and finding their parts to play. They learn, teach, participate and grow in order to do real work that is valued by others, as well as themselves.

STATEMENT OF RESEARCH

If children have a chance to engage in Real Life Learning in school, they develop a love for learning, a feeling of responsibility and value in their community, and their self-esteem soars. Finally, they feel needed. They are also motivated to read, write, and use all their academic skills in order to do this important work they have chosen. Real Life Learning gives students hope that they can make a difference in the world. It allows them to believe that a sustainable future is possible, and that they have some influence over what that future will be.

RATIONALE

John Dewey(1916) knew that learning should be experiential. The student should construct his own knowledge. Learning should be natural and meaningful.

Students should be scientists, continually experimenting with different materials in order to learn more.

Dewey was concerned that students experience democracy in their school life so that they could mature to be responsive democratic citizens. Instead, in many classrooms, one adult is making all of the decisions for the class, what to teach, when and how to teach it. If the students are constantly following the teacher's directives, we are raising passive citizens. If the students themselves took control of the "what", "when" and "how" of teaching, they would become experienced decision-makers, questioning and responsive citizens, gentle and effective teachers.

Dewey knew that learning should be child-initiated, child-oriented. Generally, children are sadly underestimated; they are capable of so much more. Respect for children, for their capabilities and individuality, demands that we allow them ownership of their learning.

BACKGROUND AND NEED

It's impossible to teach everything in the Information Age(Sarason, 1972). The quantity of information is doubling at an ever-increasing rate, changing the status of "content"

as the most important guide in education. Sarason(1972) sees the huge discrepancy between the experiences and skills students need to have in order to succeed as adults and the methods and subscribed content of our average school. Our school organization and methods are inadequate to prepare students for the future. Sarason sees that everything needs to be rethought and revamped. The ever-increasing deluge of information, and changes in technology, cannot be addressed by teaching students in traditional ways. Teaching more content faster is not progress.

Like Dewey, Barber(1992) is also concerned that we are not raising our students to be democratic citizens. He believes that service learning enables children to learn to be responsible and play a valuable part in their community. Again, students can construct their own knowledge. They can be entrusted to develop their own skills, with helpful guidance and structure. Placing students in real situations enables them to feel like what they do counts. They are part of a community, a country, a world, that responds to what they do. Skills needed to be an effective democratic citizen can be attained through service learning such as questioning, cooperating, attaining consensus, being resourceful, and communicating. Students learn how to

obtain what they need, how to analyze, prioritize, and be critical consumers.

LITERATURE REVIEW

Teacher and Student: Issue of Control

Information from recent studies strongly supports the idea that students should be allowed to have more choices about their education. A shifting of roles between teacher and students necessitates that the teacher relinquish some control. This idea is consistent with scientific studies which examine the relationship between having control and overcoming fear. The Gunnar-Vongnechten(1978) study of 12 month old children showed conclusively that startling events were pleasurable to children who could control their occurrence, while the same events were terrifying to children who could not control them. Control over something new, and perhaps surprising, allows the child to assimilate and enjoy the new bit of knowledge.

Danner and Lonky(1981) concluded their study of teacher and student control by stating that students need more choices. Students were most motivated by tasks that were just a bit harder than what they had formerly completed

successfully. The best way for a teacher to match students' abilities to tasks is to give the students the choice of activities, and the responsibility for their own learning. Danner and Lonky also found that rewards--in some cases, even teacher praise--were detrimental to student motivation. Students sensed loss of control when a reward was given for a task they were highly motivated to do anyway.

Student-designed Curriculum

Nelson and Frederick(1994) found that allowing students to help design the curriculum increased motivation and allowed students to choose the modes of learning best for them. Koetsch, Daniels, Goldman, and Leahy(1994) developed Museum-in-Progress, a process that gives students the opportunity to build an exhibit, encouraging their abilities to brainstorm, problem-solve, take risks and do something worthwhile. Through this activity, students could use their many styles of learning, and their creativity to examine a multi-faceted subject.

Through the Teaching for Understanding Project, Perrone(1994) examined the need for "generative topics", those that are broad and complex enough to elicit interest, even passion, in the students involved. Students help define

topics to create their own original work. Also, assessment of understanding is formulated and negotiated with students.

In her writing, Wiske(1994) tells how projects like the Teaching for Understanding Project break these teaching taboos: the teacher should give the knowledge, the teacher should have the authority over students, the teacher should have the responsibility for seeing that the students learn. When teachers share these roles with students, teaching is humanized, and students are empowered, heartened by their own abilities and opportunities. Teacher is also learner, students are teachers.

Student Responsibility for Learning

German schools have long emphasized this constructivist view that students are responsible for their own learning. Zahork and Dichanz(1994) state that German schools produce lifelong learners by having multi-year grouping, community-based curriculum, and responsive teaching. Teachers keep students more than one year. This practice assures that the students' needs and abilities are well-known. The knowledge of the group is strengthened by their history together.

In addition, students connect their classroom work with their communities through projects and studies involving

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them. Students discuss their experiences and ideas continually, the teacher acting as a sympathetic coach. A safe environment is created for involvement, thinking and risk-taking.

Schools can also promote creative excellence by empowering students. Sternberg and Lubart(1991) observed that when students are allowed to define the problems, teachers noticed that creativity increased. When the teachers had respect for student insights, giving them choices increased creativity. They stated that most classroom problems are formulated by the teacher, or a textbook, and that they tend to be simplistic, unrealistic and intellectually unchallenging. For students to develop their creativity, these attributes need to be encouraged: tolerance of ambiguity, risk-taking, and confidence in oneself. Teachers assist in this process by modeling these qualities and by permitting students to generate their own questions, by leading them into gray areas, by revering every idea. The work attempted by elementary school children should be more like that done by graduate students: full of surprises and hard nuts to crack, giving them opportunities to sweat and to dream.

Shifting power to the students can do all of these things, and it can also aid them to be better citizens. D'Amico(1980) believes children need opportunities to make decisions about real things in order to become effective decision-makers in the future. They need the chance to contribute to society now, to practice those citizenship skills required later, such as participating in discussions, gaining consensus, assuming responsibility for actions. By practicing these skills now, students will feel confident in their abilities, motivated and effective, connected to the real world.

Student empowerment produces many immediate benefits and future benefits as well. Kohn(1991) observed that giving children choices allowed them to develop positive values and caring behavior towards others. He promotes the idea that demonstrating and encouraging "prosocial" behavior in the classroom is an important goal of education. If students are allowed to create their own rules, their own course of study, they will internalize those values which they construct through their classroom experiences. Students need to have opportunities to be caring to others in order to develop positive values themselves.

The Child Development Project(Kohn, 1991) showed that classes that switched to a more child-empowered form, with students deciding about rules, curriculum, problems, and so on, exhibited more instances of prosocial behavior than did the control group. Kohn argues that prosocial behavior is natural to us and that school can be a humanizing place.

In a later article, Kohn(1993) again examines student choice. Children in classrooms where they are heavily controlled experience "burnout", cessation of interest and motivation. Self-determined students feel better physically and mentally, achieve more academically, develop positive values, and feel respected as people.

Control or chaos are not the only choices for a classroom. Though the loss of some control is usually difficult for the teacher, the payoff is great. It includes increased teacher interest, the invigorating unpredictability of working with his co-worker students. Children can decide curriculum, they can pick the mode of learning best for them. They can develop and follow fair rules, learning self-control. They can understand why this learning is important and how it connects to the world around them.

THE HISTORY OF THE CALIFORNIA FRESHWATER SHRIMP PROJECT

In November, 1992, my fourth grade class and I had been having a depressing discussion about the plight of endangered species when one student asked, "But, Mrs. Rogers, what can WE do to help endangered species?" So began our Shrimp Project, a class effort, involving ecology and community, to try to help the endangered California Freshwater Shrimp.

We voted to begin an eco-action project and sent for information about the California State Adopt-A-Species Program, which encourages schools to choose a California endangered species to aid. The students chose the California Freshwater Shrimp(Syncaris pacifica). We went to local libraries and copied as much information about shrimp, all kinds of shrimp, as we could. The information we were learning was shared with the class.

We sent for scientific papers on the California Freshwater Shrimp from the California Department of Fish and Game. Pairs of students researched each of the fifteen creeks the shrimp inhabit, noting estimated populations and conditions. We chose Stemple Creek for our rehabilitation.

Along with the charts of shrimp information, the students filled our walls with watercolors, and drawings of California Freshwater Shrimp. Poems and a shrimp fairytale were written.

We brainstormed a list of what needed to be done to aid the shrimp. Then the class decided to break into committees in order to specialize. Most students were on two committees each. Our committees were:

Stemple Creek Committee--This committee was to coordinate efforts to rehabilitate Stemple Creek. Students gave presentations at a Resource Conservation District meeting and a Stemple Creek Enhancement Project meeting. These students worked with the rancher planning the rehabilitation of the creek on his property. Our entire class participated in the actual planting.

Huichica Creek Committee--In order to find the best way to proceed with the Stemple Creek restoration, this committee studied and appreciated the Huichica Creek Land Stewardship, a good example of cooperation between environmentalists and private landowners.

Lagunitas Creek/Marin Municipal Water District Committee--This committee corresponded with park rangers and with the local water district, voicing their concerns that enough water be released from the reservoirs into Lagunitas Creek for the shrimp and other creek species.

T-shirt Committee--Each student produced designs and lettering for the shirts, and we voted for one. This committee coordinated efforts for T-shirt production and sales, including ordering shirts, and checking inventory.

Poster Committee--This committee worked with two local artists planning the design and production of a poster to raise money for the Stemple Creek Enhancement Project.

Writing Committee--Students wrote letters to government officials alerting them to the plight of the shrimp and asking for their help.

Shrimp Club Committee--This committee initiated the Shrimp Club, designing donation forms, by-laws, membership cards, and handbills. They input new memberships into the computer.

Public Relations Committee--This committee was very active sending press releases to all local newspapers. They used the telephone and FAX machine to alert media to key shrimp events such as the Shrimp Search and the willow planting. They also arranged a live radio interview.

Fundraising Committee--Students researched ways to raise money to help save the California Freshwater Shrimp. A penny drive was begun.

Super Comic Committee--As one student put it: "Our goal is to help the shrimp by telling and educating through comics so it's not boring." "The Bionic Shrimp" educates and entertains.

Stamp Bags Committee--In cooperation with local grocery stores, students designed and produced a rubber stamp so that bags could be stamped with a shrimp insignia encouraging people to join the Shrimp Club.

Video Cam Committee--All major shrimp events, speakers and committees were taped by these children. The tapes will be

edited by students into one video so that other people can learn about our project.

Book Committee--Students wrote a fictional book for children about the California Freshwater Shrimp called, Little Shrimp's Journey. It will be edited and self-published by the children.

By April, the whole class had worked on and produced a Shrimp Information Packet. Packets were distributed in grant packages, to the media, and to the interested public.

The Directors of the Stemple Creek Enhancement Project and the Huichica Creek Land Stewardship visited us and spoke about the importance of cooperation, and communication as the supreme tool between conservationists and private landowners. We learned that conservation and rehabilitation were important and that diplomacy was the key. Learning about this perspective was one of the great lessons of our project.

The students' ability to communicate effectively grew. They also sought opportunities to spread the word about the shrimp. Their contact resulted in a live interview on KGO Radio about our Shrimp Project, which helped to increase the public's awareness of the shrimp's plight.

Another example of how well the students did on their own occurred at a press conference we held during our Shrimp Search, the day we first went to actually see the shrimp. A reporter said she needed to interview me to get the particulars of our project. I started to talk to her but got pulled away by something else that was happening. So much was going on at once. When I finally returned to her, the reporter stood surrounded by students, and the interview had been completed. The children had answered all of her questions, filling her in on many details. One student grabbed her hand, and thanked her for coming. The reporter wiped a tear from her eye.

Many times children can get things done that adults cannot do. In June, we wanted the engineer involved with the dam proposed for Stemple Creek to come in and talk to us about the plans. A Shrimp Project student called him several times and was so gracious and polite that he later told me that he only came to speak to us because of the way she had talked to him on the phone.

We used our Shrimp Project information packet to enter the Anheuser-Busch "A Pledge and A Promise" Environmental Awards. In May, we were notified by Anheuser-Busch that we were finalists for these awards. The class needed to vote

for one student to attend the ceremony in Tampa Bay, Florida. Children nominated each other by telling what special contributions the person had made. When we were done, every child in the class had been nominated. Though only one student represented our project, everyone's contribution had been honored.

I asked the Anheuser-Busch staff to tell me what had set our project apart. They said that they liked the fact that we were working with many different kinds of people, such as ranchers, biologists, rangers, other schools. They recognized the project as one which enhanced and gained strength from the community surrounding it. They also appreciated our coming to the aid of an endangered species, with an expanding plan to make the future better for all species of the shrimp's ecosystem.

Within six months of beginning our project, we had received local and national recognition including the Grand Prize of $32,500 from the Anheuser-Busch Theme Parks Environmental Awards Program. In this nationwide contest, the Shrimp Project was judged to be the best environmental project in all categories, kindergarten through college.

Through our work, we had alerted many government officials about the shrimp's dilemma, instituted a Shrimp

Network of biologists, ranchers, businesspeople, and begun the rehabilitation of Stemple Creek. Perhaps, best of all, we found ourselves empowered, alive with motivation and enthusiasm for the project that we had initiated and propelled forward.

STUDENT SELF-EVALUATION AND REFLECTIONS

One student expressed the difference she felt in working on the Shrimp Project: "I think this project changed everything I thought we could do. I always thought kids meant nothing. I really enjoyed doing this, it was fun and I felt like our class just knew exactly what to do. I feel that it did show me that kids can make a difference in the world, and that we are not just little dots." Children want to feel valued.

Another student decided to write a Shrimp Pledge that could be recited by our class to show our dedication: "I pledge to protect the shrimp and to respect the stream of life upon it and to honor the shrimp in our Syncaris pacifica family, one stream, one world, in harmony with peace, swimming, and freedom for all."

Dedication is an important lesson learned by the "shrimpers". As one student put it: "I feel very committed to the shrimp. It seems as if we're their bodyguards against what other people are doing."

Students felt challenged. One girl said: "I learned that ...it's not that easy to go to meetings, or get involved in things that grownups are doing, or to get recognized for what you're doing, and that with a little bit of hard work, you can do a lot."

Another child said: "I didn't know I could be so important. I had to make lots of phone calls to people I didn't even know and it made me feel good. Someday I want to look back with my grandchildren and say, 'Yeah, I helped save those shrimp.'"

Students learned the value of diplomacy. "I learned from this project that you need to be careful what you say and the tone of voice changes it too."

Here is what one boy said he learned through his work on the Shrimp Project: "I learned how to contact important people and I learned all about ecology and science and that there are a lot of ups and downs in life. Also I learned to have perseverance and good things will happen. I enjoyed doing this project a lot because while we were doing the

Shrimp Project, we were doing Math, Science, Writing and things that are in real life." Real Life Learning is integrated learning.

OUTCOMES OF REAL LIFE LEARNING

The Shrimp Project has two overarching goals of primary importance: 1) efficacy for children and 2) healing for the environment. These equivalent goals are dependent on each other. The environment will not be healed without resourceful, insightful human beings to do it, and the students will not be able to grow up to be these resourceful, insightful human beings without a sustainable environment in which to live.

Encompassed by these two primary goals are other positive outcomes wrought by the Shrimp Project, some of which were foreseen, and others which were unexpected. The development of student-generated environmental projects is an important way to educate. Here are some of the powerful outcomes that are possible:

1) <u>Students have the chance to feel valued, empowered and proud.</u>

Children have opportunities to learn that they are an important and effective part of their community, which can be responsive to their requirements. There is a greater possibility of meeting students' emotional needs.

It is true that schools are being asked to do more than ever before. Schools must somehow make up the difference for children's neglect which is engendered by society's pivot away from children's needs, and deepened by some parents' necessary focus on economic survival. Students cannot learn, or learn very poorly when their emotional needs are not met. If a child is not learning because she is emotionally upset, applying more academics will not be effective. A student will need to feel safe, and valued by her class. Schools can lead the way to engendering respect for children by all adults. Real Life Projects give children an opportunity to participate in their community in a way that inspires others to admire and value them.

Teachers can allow their classes to develop a network of others who might not have connected otherwise. If school was truly connected to the community, having a healthy flow of ideas and support, there would be no need for Career Day. Students and teachers would be continually in contact with

all kinds of people, seeing them perform their jobs, hearing their points of view.

The students found that they got a response, usually a positive one, from their community. Most letters sent received replies. Media personnel cared about the children's work. They started to be taken seriously.

2) Students feel dedication and commitment to something that helps the world.

Students are learning how to dedicate themselves to a project that helps others. Commitment and dedication are not often "taught" or engendered in schools. An eco-action project such as the Shrimp Project gives children the opportunity to better the world, to help, and to commit to a project that extends through a lengthy period of time. It encourages prosocial development.

3) Individualization is possible as students choose jobs that suit them best, and also try tasks that challenge them.

Students have different interests, learning styles, temperaments, talents, and difficulties to overcome. With a broad enough project, students can choose the parts that suit them the best. Much growth is possible when students

attempt tasks just a little more difficult than those they have already accomplished. Students can also try something totally new.

One Shrimp Project student who literally had not raised his hand once during the first five months of school suggested writing to President Clinton. He became the leader of the Writing Committee. He was interviewed on television and opted to be one of six students on a panel presenting to thirty employees of an interested corporation. The change in him and what he was able to do was stunning, but not unusual. Shy students found themselves making phone calls to someone they did not know, running a meeting or giving an interview.

There had to be a balance between the Shrimp Project tasks attractive to a student, and the activities he might need to experience in order to grow. Students could be encouraged to try a variety of activities: presenting, drawing, writing, designing, planning, analyzing, and so on.

The Shrimp Project was open enough that students could choose niches which were the best for them, and take things as far as they wanted. Students with extraordinary academic abilities jumped into writing, drawing and speaking and had enough room in which to grow. Students with slight learning

disabilities were reading and writing more than ever before, and with enthusiasm, as they had to produce letters, committee reports and press releases for the media.

Real Life Learning addresses different modes of learning. Kinesthetic, musical, and verbal learning styles all can be valued and utilized. A child who learns kinesthetically can create a dance for the shrimp. Students can choose to paint a watercolor of a shrimp, to design a fence for the creek, to write a fictional book about shrimp, to compose a song about shrimp. Every mode of learning can be served, and the project is enhanced by the differences among individuals who participate. Again, they are the designers of their own opportunities for learning.

4) Students learn to take risks, and that life has "bumps" but you can persevere and progress.

When the student feels safe in a class(i.e. she will not be teased or blamed for mistakes or differences) then she will be ready to try something new. Many of the tasks for the Shrimp Project required risk-taking on the part of the students, and the teacher, for that matter. Phonecalls were the most nerve-wracking experiences for many of the children, but they improved.

5) Students learn cooperation and communication skills: self-presentation, diplomacy and tact.

There are few irreparable mistakes, but some cannot be allowed, like treating a rancher or reporter or anyone rudely. Saying the wrong thing to the wrong person could be very damaging all the way around. So, while the teacher encourages taking risks, he must make it clear to all involved in the project that good manners and diplomacy must be used 100% of the time.

One of the most important things we found in doing this project was the necessity of diplomacy. We learned that we cannot let the CAT(Confrontation, Accusation, Threat) out of the bag but need to work gently on this project, being understanding of others' very valid points of view.

In addition, committee work necessarily involves consensus-making and the interdependence of all committee members. Students learn to behave responsibly in their groups, encouraging each other to produce his best work.

6) Students acquire standard academic skills through integrated learning and obtain skills needed in real life that are not usually taught in school.

A well-discussed goal of modern education is to make Math, Writing, Science, all subjects, integrated and relevent to students. A Real Life Learning project does that. All the skills we wish students to have for real life are necessarily tapped when they are doing actual work.

Shrimp Project students gained abilities such as: how to reach consensus, how to organize materials for presentation(e.g. an information packet), how to do phonework, how to analyze and prioritize information, how to use a FAX machine, how to communicate by E-MAIL, how a checking account works, how to make decisions and so on. Most of these skills are not those that we usually teach in school.

The students are also learning more about how the world operates. This project necessitated learning about the workings of: ecosystems, business, government, the media, the Endangered Species Act, farming, and school, to name a few.

7) <u>Students learn that life is complex.</u>

Understanding different perspectives is required for peaceful living and to make progress cooperative. It is not enough to think that everyone should just help the shrimp.

It is much more complicated than that. When children talk to ranchers who are having a hard time making a living on their land, people who resent the government coming in and telling them what to do, they start to understand that the problem with the shrimp, like most real life problems, is not an easy one.

For example, opposition or support for the construction of a water reclamation dam like the one proposed for Stemple Creek is not an easy choice. To just say "The dam is bad. We don't want the dam" is an oversimplification. After the dam engineer came in and talked to us about it, the students recognized both sides of the issue: the dam will put ten acres of old bay forest with 22 native grasses under water; also, the dam will allow the city of Santa Rosa to reuse its water, a scarce resource in California.

It is important for the children to see that the dam will put acres under water no matter where it goes, yet it is also important to recycle water, especially for the future and it helps the environment when we do so. There is no class opinion about the dam yet, but we will continue to learn and discuss the complexities of this issue.

Teaching tolerance and understanding of other people's perspectives is vitally important. The rancher said that

one of the reasons he wanted to work with us on this project was that he wanted "citified people" to know what his life was like, what pressures, and problems he faced. He said he wanted people to know that ranchers are not the bad guys, purposely polluting their land. They are trying to make a living, and in general, love their land and the life that is found on it.

The rancher wanted the Valley Quail to make a comeback on his ranch. The plants we planted to help the shrimp are also those that the quail like. We are trying to put a whole ecosystem back together. The interconnectedness of all life is evident and highlighted in our eco-action project.

8) Students learn to respect and care for the environment.

Children can learn that they have a part to play in the healing of the environment. There is something that they can do.

When we planted willows and blackberries out on the ranch, the children felt good about themselves, and so did the parents. There was a healing taking place inside all of us that day. We knew we were doing good work, that was important for the future.

There are many opportunities to teach, to share, to give others the opportunity to be involved. Many of us feel guilty about what has been done and is being done to the environment. In realigning ourselves with nature, we may heal and thrive. As we rehabilitate an ecosystem, it also heals and can thrive. Rehabilitation is a chance for the ecosystem, and us, to start over. Eco-action projects give hope.

It is estimated that one hundred species or more are becoming extinct every day. Every species is precious and unique. A careful examination of any species reveals its beauty. All species are an important part of the life we share, and we cannot afford to lose any.

Our project can be considered a model of Ecoliteracy, an eco-action project(Capra, Cooper, Clark, Doughty, 1993). Ecoliteracy is much broader than studying plants and animals in their ecosystems. It is about the whole interdependence of life. Nothing can be appreciated or understood without its context. One can study the parts of something and still not understand the whole because the whole is more than the sum of its parts.

An Ecoliteracy-based school studies environmental principles through eco-action projects, such as the Shrimp

Project, but it also is focussed on community and cooperation. Students are learning not only how we fit into the living scheme of the earth, but also how we fit with other human beings, who are also part of that scheme.

I feel some haste to start helping to heal the environment, and to enable education to be what it should be for students. The scope of a Real Life Learning project does not matter. What matters is that the students feel empowered and are working in a class that affords them the support and security to grow. What matters in an eco-action project is the involvement of the students and the environment in an eco-action plan that encourages positive changes for all.

TEACHER AS FACILITATOR AND LEARNER

Real Life Learning involves not "what is taught" but "how is it taught". It is a shifting of roles for teachers, students, and administrators. It is a change in attitude in which children are given the opportunity to direct their own learning, to lead, to teach, to work in the real world. The

hard part for the teacher is to share control with the students, which means letting go of some of her control.

Teaching must become more and more a dialogue. Teachers and students must become colleagues. Guidance and advice is still very much needed, yet many tasks usually handled by the teacher, such as organizing, planning, researching, making decisions, are rich with opportunities to learn. It makes sense to share these responsibilities with the students.

Instead of the teacher planning coursework, the class can talk about what they already know, what they want to learn, and what they need to know. When students have more of a say in their education, their enthusiasm soars. Each time our class approaches a subject together, children end up working together on the weekends, meeting at lunch, taking field trips in pairs. They get very excited about their part in teaching others.

When students are enthusiastic about an activity, that learning is irreversible. Lasting knowledge comes from that which we seek and construct ourselves.

Student-initiated, student-driven learning is exciting and meaningful for everyone if framed and guided properly. It is not enough to give the students a room full of

materials and say "O.K. Do what you want. Go learn." They need some guidance and encouragement. Teachers can help students "relearn" how to teach themselves. They were born knowing how to learn on their own, but lost the sense of ownership through years of depending on the teacher.

While we were working on the Shrimp Project, I learned how to redefine my role as "teacher". The biggest attitudinal change was that I really considered myself as part of the project, not the leader. It is true that I lead at times, but so did many of the students.

As the project progresses, I find myself, moving more into the background, which is where I want to be as much as possible. The Shrimp Project was not a case of the students following their teacher. In fact, many times I had a difficulty keeping up with them. I want to be a part, not the head. I am trying to remember to say "our class" instead of "my class". I do not want to be doing tasks that they can do.

With work like the Shrimp Project, everyone learns, and everyone teaches. A network is formed flowing through the students, and then out into the community and back again. Students learn, teach, organize others. The teacher also learns. As absurd as it may sound, I think the teacher

should not know much about the subject before a project is attempted. He must model learning, researching and risk-taking. If he is an expert on the subject before the project is begun, he cannot model learning. Before the Shrimp Project, I knew virtually nothing about shrimp. I was as excited and surprised by our new knowledge as anyone.

All of this learning takes place because risk-taking is modeled for the students by the teacher and encouraged by all. We were learning every day, and making mistakes as we went. Some opportunities were missed, and as the teacher, it is difficult not to want to control everything to ensure a certain outcome. I began to consider the students' learning more important than the progress of the project, in many ways. Maybe I did not always like the way it looked(it was not the way I would have done it), but, if possible, I let the students do it their way. Often they came up with something finer and much more creative than I ever would have produced by myself.

Some missed opportunities are not going to kill the project, and in real life there will be bumps and misses, but we are committed and we keep persevering. All of this is important to learn.

As the main teacher involved with the project, many times I needed support and approval as well. I got some of this encouragement from our class, but sometimes I needed the approval of my principal. Without administrative support, it is doubtful the Shrimp Project would have been successful.

The Shrimp Project did not happen in a vacuum. It bloomed because of the environment in which it was nurtured. Our school is a place where teachers have a voice in the important decisions affecting us. We are not told what to do, but are respectfully asked our opinions, which are heard and considered. Therefore, we feel valued and respected. To have a democratic classroom, the school must be a democratic one. Respect and trust trickle down into the classroom.

A more democratic classroom, is one where everyone has an opportunity to lead, and to learn. There are still hierarchies in the classroom, and the school, but they shift and change, allowing all to have a voice. They are not hierarchies of one having power over another, but ways to facilitate work, cooperation and decision-making.

We are talking about a new kind of respect for children. One that is their due, but that they rarely get.

Imagine what kind of adults these students would be if they had charge of their own learning throughout school, if they had been involved in projects that necessitated leadership, dedication, risk-taking, communion with the "outside world". What a richer, healthier world it would be with their participation.

I suspect that a student who directs her own learning will be a capable, questioning, resourceful adult. A world full of these adults will make for a very different future. They will be adults ready to participate in democracy because they have already done so as children in school. They will be adults who will consistently take care of the earth because they always have.

CONCLUSION

To view things ecologically, one must see each thing in context: a species as a part of its ecosystem, students as a part of their community, education as a part of life. The Shrimp Project allowed the students to be influential, active participants in their community. They learned about the interconnectedness of all life, the fragility of the

special place we call home, the earth. They belong, as we all do, to the world.

As one Shrimp Project parent said: "Perhaps it will be the children and their teachers that will save our Mother Earth, after all." Teachers can lead others to a better world by guiding and following the children.

One Shrimp student's observation says it all: "I thought that this project really changed my point of view because I thought that teachers would make the path and students would follow, but really in this case, students make the path and teachers follow."

The Shrimp Project was like a pebble thrown into the water with circular waves ringing outward and outward. We hope that our small waves are part of a bigger wave welling up in education and environmentalism, a wave that will meet our children's needs in a way that enables them to learn all that they need to know and survive in a sustainable environment that is their home.

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